

Nonproliferation Research & Engineering

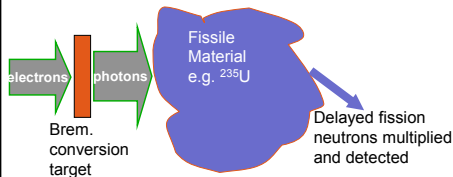


FY 2003

Active interrogation: simulation of photofission delayed neutron SNM detection

Unclassified

MCNP(X) simulation with nuclear data



Description

Establish a capability to model and simulate photofission delayed neutron detection of SNM

Build new MCNP(X) simulation capability, using new evaluated nuclear data

Los Alamos Team: T-16, X-5, D-10, and NIS-6

Technology Impact

A simulation tool to guide and optimize experimental detection technology development. The tool will also guide interpretation of delayed neutron and neutron multiplication measurements

Link to NA missions

Nonproliferation, active interrogation, detection of ^{235}U

Expected customers:

DHS, Customs, Maritime, Emergency Response

Status

First (but approximate) ENDF evaluation of required delayed-neutron nuclear data completed for U-235,238, and Pu-239.

MCNP upgraded to use table-based evaluated photofission delayed neutron data. MCNPX / CINDER90 methodology also established.

Simulations of initial NIS-6 experiments qualitatively match.

Future plans

DHS proposal favorably reviewed, but still pending.

Future simulation code and nuclear data enhancements are needed.

V&V with new measurements from NIS-6.